

Synergia LLC

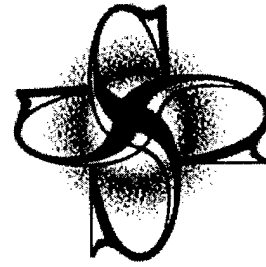
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Computational Models of Human Organization Dynamics

Quarterly Report #9

Sponsored by
Defense Advanced Research Projects Agency
Information Systems Office
Computational Models of Human Organization Dynamics
ARPA Order No. E495
Program Code No. 6S10
Issued by DARPA/CMO under Contract #MDA972-97-C-0001

Period Covered: 3/1/99 – 5/31/99

Reporting Period

This is the ninth quarterly report for the project: Computational Models of Human Organization Dynamics. This report covers the period from 3/1/99 through 5/31/99.

Progress During Reporting Period

During this quarter we have developed a preliminary specification of the way risk management methods can inform asymmetric threat analysis. The essential steps are as follows:

- Strategic decision models of all major stakeholders – self, friends, influential neutral parties, and adversaries are developed formally. These decision models specifically address those decisions that encompass the ways adversaries threaten or otherwise exploit friendly weaknesses (physical and organizational). Therefore we focus on all major parties, and use the content of their decisions to frame and guide the essential modeling requirements.
- Value of information analysis is a well-founded technique for pricing information in terms of its impact on the worth of an optimal decision. We propose to use it to determine which information would be both particularly valuable and cost-effective to acquire. Information should be gathered if and only if its influence on the value of the optimal decision exceeds the estimated cost of acquiring the information.
- Information expected to produce a net improvement in the outcome is gathered.
- Organizational models are built of the practices and joint practices of the actors whose actions affect one or more variables in the decision models – these models are designed to report out the high-value information that needs to be constructed. Our Practice Mapping methodology defines the data-collection and modeling steps.
- Organizational simulation is conducted, over a range of scenarios relevant to the sensitive variables in the decision models.
- The results of simulation studies are used to refine the information substrate (probability distributions) on which the decision models depend.
- Results of simulation are analyzed for requirements to reframe or revise the decision models or the organizational models. As required, the models are modified, and the process continues.

The framework we have developed is described in detail in the briefing we have delivered to the government, and is available upon request.

Plans for Next Quarter

We will begin to develop a formal ontology that spans the dimensions of our research. This research will provide a foundation for describing cognitive and social/organizational formations of asymmetric threats, or indeed any organization. We will also refine the risk management characterization.

Equipment Purchases

There were no equipment purchases this quarter.

Personnel Matters

There have been no changes in the key personnel proposed for this project.

Meetings, Important Exchanges, and Decisions

Drs. Courand and Fehling met with Dr. Larry Willis at DARPA during this project quarter. Dr. Willis has decided to extend the period of performance and augment the funds of this contract so that we can enlarge our ontology and technology development efforts in support of the asymmetric warfare domain. Dr. Willis has also offered to help us gain access to domain data. He will seek to identify a contractor and arrange for that contractor to supply us with suitable data. We will help in any way we can to be clear about our data requirements. At this time, our guidance is to emphasize minimally-processed data, or at least that low-level data is included with any analysis of it, but otherwise, to bias toward sending us anything that reports on an actor of interest.

Problems

We have no major problems to report at this time. We foresee no substantial risks to our ability to complete this project successfully, on time, and on budget – the organizational modeling, risk management, and technology development objectives of this project are under our control and proceeding well.

Fiscal Status

The table below summarizes the fiscal status for this contract and our projected spending over the next quarters.

Amount Currently Provided	\$1,574,647.
Expenditures and Commitments to Date	\$828K
Manhours Planned, Actual	Planned = 858 Actual = 639
Estimated Funds/Qtr to Complete Work	\$249K
Estimated Date of Completion	2/29/00

Distribution of this Report

The following individuals/organizations comprise the distribution list for quarterly reports on this contract.

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